# Key Findings and Messages Emerging from the Nile Basin Development Challenge Program (NBDC): Towards a New Integrated Watershed Rainwater Management Paradigm

## Explanation

After a consultative planning period, implementation of the NBDC program began in 2010. It aims improve the resilience of rural livelihoods in the Ethiopian highlands through a “landscape” or watershed approach to rainwater management (RWM). We define RWM broadly, as including “sustainable land management” (SLM), “soil and water conservation” (SWC) and water management in an integrated natural resources management model. It includes mapping, storing, managing and efficiently utilizing water and nutrients at landscape scales. In the Ethiopian Highlands RWM at landscape or watershed level includes crops, livestock, fisheries, & trees.

Implemented by a consortium of international and national partners[[1]](#footnote-1) as part of the Challenge Program on Water and Food (CPWF), this Research for Development program combines analysis of documents and sources on past and current experiences with sustainable land and water management, local field research, modeling and application of spatial analysis to assess how improved practices can be scaled out and what the larger impacts would be. There is a strong emphasis on consultation with stakeholders, capacity building, and communication. The program will be completed at the end of 2013. As part of the process of maximizing the quality of outputs and outcomes of the program, in early 2013 NBDC researchers contributed to identifying a set of “key messages” emerging from the research. More than 40 suggestions were made. We then synthesized these into six key messages, which we propose are the elements of a larger vision for a “**new integrated watershed rainwater management paradigm**.”

These messages were presented and discussed in detail at the 3rd National Land and Water Management Platform meeting on 20-21 February 2013 (<http://nilebdc.org/news/>). The 40 or so participants spent nearly two days discussing the messages and the details and evidence behind them. The participants broadly endorsed the key messages and overall vision, but offered very important suggestions for refining and improving them. We are grateful to the participants for their hard work and commitment shown at the workshop. This document draws on the workshop discussions and research results to date to present the over-arching vision and the six key messages supporting the vision. The messages have been revised and improved based on the workshop discussions. In addition, the document briefly explains the rationale behind each message, the strength of the evidence, the reference (source), and what the NBDC team considers to be the next steps in further developing and communicating the messages. The NBDC team believes that the findings from their work can be used to further strengthen the implementation of the Ethiopian government’s SLM program. The document concludes with suggestions on possible future activities, building on the progress made to date.

The purpose of this document is to share more widely these draft messages and seek comment on how best to develop them over the coming months. We welcome any feedback on these and comments can be directed either via e-mail or the web to Doug Merrey ([dougmerrey@gmail.com](mailto:dougmerrey@gmail.com) ). We request any comments be received in the next six weeks, by the end of April 2013. These draft messages and the comments associated with them will provide the focus for completing this research for development project. The next stage will be to ensure these messages are written up with the underpinning evidence base as both publications but also as policy briefs. At the same time we will use a range of existing national and international forums to disseminate our findings as widely as possible to influence the direction and development of future policy and best practice.

## An Overarching Vision of RWM in the Blue Nile Basin

Ethiopia’s policies and programs on sustainable land and water management have evolved over several decades and have had a good success and impact on land management. We believe they are on the cusp of being transformed and integrated into a new paradigm. The core elements of this emerging **New Integrated Watershed Rainwater Management Paradigm** are:

1. Local community empowerment and leadership based on demand;
2. Partnerships integrating and sharing local and scientific knowledge;
3. Emphasis on learning process by all parties in a linked manner;
4. Creating incentives for innovation and success;
5. Strengthening capacity of all stakeholders; and
6. Using new learning and planning tools.

These *elements are highly integrated* – success is more likely if all the elements in policies and implementation strategies are included and build on existing policy directions (?). *A* ***landscape*** *or watershed perspective is central to the new RWM paradigm.* We believe that the critical innovations emerging from NBDC are:

1. The shape and core elements of a new integrated RWM paradigm at watershed level, and
2. Tools and methodologies for effective implementation.

Therefore, the proposed new paradigm does not replace the existing programs and strategies. Rather, it offers a pathway to make better use of existing policies and strategies to achieve the goals more effectively.

The **audience** for theses six core messages includes senior Ethiopian policy makers and leaders of implementation at federal and regional levels, senior officials at zone, woreda and kebele levels and Ethiopia’s development partners (i.e. donors and international finance institutions). In addition, researchers, NGOs, and other stakeholders will also find the messages to be of interest. If the new RWM paradigm is to be implemented, additional specific messages will be needed aimed at other local level stakeholders, trainers, etc.

The next section uses a table to present the vision and its six core elements or key messages. The table contains four columns: messages, explanatory notes, strength and source of evidence, and next steps. The evidence column states whether the evidence is strong, moderate, or weak, and provides at least one reference (source).

## Key Messages, Evidence, and Proposals for the Future

| **No.** | **Message** | **Explanatory Notes** | **Evidence: Strength & References\*** | **Proposed Next Steps** |
| --- | --- | --- | --- | --- |
|  | **New integrated watershed rainwater management paradigm** | Broadly endorsed by workshop participants.  Sustainable land and water management (SLM, RWM) is a critical prerequisite for long term development of Ethiopia. Since the 1980s, Ethiopia has been learning important lessons from both implementation and research, and has modified its policies based on these lessons.   1. The core elements of the vision are based on recent research and implementation experience in Ethiopia and elsewhere, building on several decades of lessons learned; confirmed and enhanced by NBDC research to date. 2. Much is known about the performance of specific RWM technologies; there has been a growing recognition and policy shift towards more local participation, emphasize on livelihoods as well as conservation goals, integration of diverse interventions, and adoption of a watershed perspective. However, some of these changes have not yet reached their full potential in terms of outcomes. 3. Recent NBDC work has developed tools and insights that make it possible to consolidate all these lessons into a new paradigm for future policy and implementation at the landscape scale. 4. Potential scale of impact is massive. | 1. Strong evidence, synthesized in Merrey & Gebreselassie 2011 [NBDC Tech. Rpt. 1]and NBDC subsequent research; see also Critchley & Gowing, eds. 2012 2. Strong evidence: Desta et al., eds. 2005; Synthesis and references in Merrey & Gebreselassie 2011 3. Evidence is growing: see references for specific messages below 4. Very strong evidence; see for example FAO 2009 [SLM Country Support Tool] 5. Work on methodological approaches being prepared for publication and wide dissemination (see below) | * Further refine and develop the paradigm based on continuing research   and consultations with stakeholders, especially SLM national platform   * If there is support, develop a *proposal for a future collaborative program* to scale up and out, monitoring and evaluation, and action research * Obtain formal endorsement of collaborative program proposal from Ethiopia and submit to WLE program * Consider making the Ethiopia collaborative program on RWM a part of an Africa-wide program |
|  | Local community empowerment and leadership based on demand is critically important to achieve long-term benefits and sustainable functioning of RWM programs   * The *role of government* is to promote bottom-up planning, facilitate strengthening existing and new local institutions, support achieving equity (gender, youth), and provide technical and financial support, capacity building, and an enabling environment | Strongly endorsed and strengthened by workshop participants. The draft new *Agricultural Extension Strategy* describes “**farmer-focused, innovation-led and sustainable** service delivery” as its central vision.  NBDC and other research supports this vision and shows that:   1. Communities currently do not feel fully involved in prioritizing RWM interventions and therefore do not fully “buy in” and take responsibility and ownership of the interventions proposed 2. Local institutional capacities, especially for collective management at watershed level, need strengthening 3. As a result of the previous points, RWM interventions often are not sustained and do not lead to the planned benefits 4. There is a perception that depending on communities’ initiative will result in “slowing” implementation of vital RWM interventions. Continuous facilitation and dialogue are needed but these skills are in short supply 5. A community-driven program may be slow initially measured by physical infrastructure targets in the short term, but over a decade or more will achieve faster and longer-lasting sustainable outcomes 6. Kebeles/woredas may be reluctant to relinquish control; devolving responsibilities to farmers may cause them to lose power. Therefore, strong linkages to local governments is critical, but local government needs to be fully representative 7. Insufficient focus on achieving **gender equity** is reducing potential benefits from RWM. | The evidence is strong overall for this message, from NBDC and also other research studies[[2]](#footnote-2). *The numbers refer to those in the Explanatory Notes*:   1. Ludi et al. 2013 [CPWF R4D Series 5] 2. Ludi et al. 2013; Merrey & Gebreselassie 2011 3. Evidence from past experiences and research summarized in Merrey & Gebreselassie 2011 4. Workshop participants 5. Case study evidence from other countries, e.g. from RWM harvesting programs in Burkina Faso, and reforestation-SLM in China: Kabore-Sawadogo et al. 2012; World Bank 2007 6. Workshop participants 7. Evidence from past experiences and research in Merrey & Gebreselassie 2011; Farnworth 2013 [report to NBDC] | * Continue documenting and analyzing community and local watershed priorities and interests * Develop guidelines as part of overall collaborative program proposal mentioned above and feed into SLM? * Develop a clear strategy for a gender-equitable program * Consultations with kebele and worda level colleagues, and with NGOs/ CBOs having experience in this area on how this could be achieved |
|  | A process that integrates local knowledge and innovation processes with other Ethiopian and international knowledge and experience, and encourages innovation, is more likely to lead to sustainable outcomes than either local practices by themselves or only promoting “scientific” technologies from outside the community | Workshop participants strongly supported this message but were not comfortable with the earlier formulation distinguishing between “local” and “scientific” knowledge   1. Neither local nor “science-based” introduced practices and technologies alone are sufficient 2. Farmers have a wealth of fine-tuned detailed knowledge of their local agro-ecology and have continued to adapt RWM practices over time; some of these have been shown to be very effective 3. Some technologies from research and other places are effective when introduced appropriately, but others have been shown to have negative outcomes 4. Supporting local innovation processes for RWM can lead to very positive and sustainable outcomes 5. Nevertheless, farmers often struggle to adapt to rapidly changing conditions and need alternative tested options 6. It is time to move away from blueprints, quotas from above—these have proven to be counter-productive; instead, modify quotas to be outcome-based, tailored to local needs as identified jointly by the community and extension workers 7. The approach should be pragmatic and needs-based, adapting interventions to local conditions and priorities. Ethiopian watershed management programs have been moving from a physical conservation focus to income-generating activities and improved upstream-downstream community interactions, which has improved results 8. Better validation of outcomes through good multi-disciplinary scientific research is needed for both currently recommended and traditional RWM practices *in a landscape perspective* 9. Benefits of improved RWM are not limited to production impacts; there are often benefits to the larger ecological system not easily quantified 10. Integration of multiple sources of knowledge and partnerships are included in the proposed Agricultural Extension Strategy but could be more clearly articulated | 1. NBDC and other research, e.g. Merrey & Gebreselassie 2011; Critchley & Gowing, eds. 2012 2. Strong evidence from NBDC and other research, e.g. Magersa 2011 [NBDC Masters research]; Critchley & Gowing, eds. 2012 3. NBDC Masters research [I SAW A REFERENCE ON WEB BUT NOW CANNOT LOCATE IT]; examples in Merrey & Gebreselassie 2011 4. E.g. Jonfa & Waters-Bayer 2005; GebreMichael & Waters-Bayer 2007; Prolinnova 2009; Abay & Gebregiorgis 2009; Waters-Bayer & Bayer 2009 5. Workshop participants 6. Good evidence, e.g. Ludi et al 2013 7. Workshop participants; Merrey & Gebreselassie 2011 and references therein 8. Workshop participants; Merrey & Gebreselassie 2011 9. Workshop participants; case studies from other countries, e.g. experiences with Payment for Ecosystem Services – see Bennett et al. 2013 10. NBDC team recommendation | * Document examples of integration of local and other practices, efficacy of local practices * Consult NGOs and others with experience in facilitating farmer innovation to learn best practices * Work with MoA to develop an implementation strategy * Work with MoA to identify alternative ways of objectively measuring program performance (see incentives message) * Include a strong component for multi-disciplinary research led by Ethiopian research institutions for validating outcomes as part of larger collaborative program proposal (above) |
|  | Effectively support and facilitate multi-stakeholder “**Innovation Platforms**” (IPs) at multiple levels (e.g. national, regional, river basin, woreda, watershed) to facilitate vertical and horizontal learning and sharing processes that can enhance the positive outcomes of investments in RWM/SLM.   * External facilitation and modest seed funds to encourage innovation, enhance the effectiveness of innovation platforms (especially at local levels), and to achieve gender equity is recommended. * Encouraging a culture of learning from experience and sharing knowledge is critical to success. | 1. Workshop participants endorsed this message but agreed the evidence is still “emerging”. They referred to other examples, for example “RiPPLE”, and a participatory forest management project, but noted there is no long-term evidence for sustainability and impacts 2. NBDC has pilot-tested IPs in 3 woredas. Results are promising and indicative according to reports on the NBDC website. No reports are available on the effectiveness at national level 3. Other terms include “Learning and Practice Alliances”, ‘Learning Catchments,” (RiPPLE), and “Learning Alliances” (Multiple Use Water Services [MUS] project). The MUS project was international including Ethiopia 4. Indicative positive results are emerging from other CPWF basins (Limpopo, Volta) 5. Value chain approach and innovation systems are the conceptual basis for IPs 6. The critical issue is how to scale up IPs while maintaining a reasonable amount of effectiveness (move from “learning to be effective” to “learning to be efficient”) 7. Workshop participants suggested focusing on kebele level (in part as a way to pressure for change upstream), and integrating the IP concept into existing groups or initiatives, e.g. Development Groups at local level, and at national level, the Agricultural Growth Program (AGP), and national SLM platform | 1. Workshop participants. No strong evidence for long term outcomes. 2. Evidence is from experiences posted on NBDC website:   <http://nilebdc.org/tag/innovation-platforms/>   1. [www.rippleethiopia.org](http://www.rippleethiopia.org); [www.mus.net](http://www.mus.net); see Smits et al., eds. 2007 2. [http://waterandfood.org/page/2/?s =innovation+platforms](http://waterandfood.org/page/2/?s%20=innovation+platforms). Results are indicative, no formal assessment available. 3. Spielman 2005, Spielman et al. 2008 on innovation systems; Merrey & Gebreselassie 2011 4. How to scale up innovation platforms is an issue that needs more work to ‘learn to be efficient’. 5. Integration into existing initiatives seems to be a practical approach, needs to be tested and validated | * Scan international literature for additional cases of use of IPs or equivalents, especially over long term * Commission an assessment of IP experience from stakeholders’ [including women’s] perspectives including advice for the future * Assess how to integrate IP concept into existing or planned programs and platforms * Develop a plan for wider testing and scaling up as part of larger collaborative program proposal |
|  | Getting the **incentives** of all parties aligned is a necessary condition for implementing sustainable innovative programs at scale. There are several dimensions:  For service-providers   * Extension workers should be rewarded for good performance, based on customer satisfaction and sustainable outcomes. * Incentives do not need to be monetary – other kinds of positive encouragement also work * Incentives for innovation are important – rewarding good efforts which fail (but are a source of lessons)   For farmers and investors   * Where the benefits of RWM investments accrue as a broad public good, or to other stakeholders such as those downstream, or only after considerable delay, appropriate incentives need to be available to private investors (e.g. farmers adopting RWM) * A market-driven (value-chain) approach, identifying how to optimize fairly the benefits for all stakeholders while reducing transaction costs and sharing costs equitably, will increase the likelihood of success. * “Smart” subsidies or other incentives can be used to ensure equity, for example provision of opportunities to women and youth | This message was endorsed by the workshop participants but with important adjustments in terms of targeting, use of informal as well as formal rewards, and emphasis on encouraging innovation  For service providers   1. Current incentive system for extension workers is based on physical targets, often leading to inappropriate interventions 2. “Incentives” should be understood in a broad sense, to include formal and informal rewards, e.g. public recognition, social networks, opportunities for training, encouragement, etc. 3. Incentives for innovation are very important, but more difficult to design – further thinking and pilot testing would be needed. “Seed funds” made available to local IPs is an example of incentives for innovation   For farmers, communities and investors   1. Evidence on need to get incentives right for RWM interventions emerges strongly from NBDC and other research, and positive examples from other countries, e.g. China, USA. 2. Growing body of evidence from “Payment for Ecosystem Services” (PES) and similar systems internationally 3. Work with NGOs and other organizations to learn from experiences and harmonize approaches 4. Evidence from other African countries suggesting targeted benefits or subsidies can be effective in promoting adoption of new practices and innovation by poor people | Overall, there is good evidence for the need to make changes, but mixed evidence on the efficacy of specific solutions.   1. Ludi et al. 2013 document problems with current incentive system for DAs as does the new draft Agricultural Extension Strategy and references therein; evidence is strong that changes are needed 2. Workshop participants 3. Workshop participants emphasized the need for incentives for innovation; NBDC emerging evidence on IPs’ use of seed funds is suggestive. How to encourage innovation while retaining an effective incentive structure for thousands of extension workers needs more thought and testing; perhaps this can be done more easily through NGOs and CBOs 4. Most spectacular case: China ‘Gain for Green’ program (Loess Watershed Rehabilitation Project), World Bank 2007; also USA soil and water conservation: Zobeck & Schillinger, eds. 2010; 5. E.g. Bennett et al. 2013 6. Workshop participants 7. E.g. Denning et al. 2009 on Malawi input subsidy program; Mangisoni et al. 2007;and many other references available on targeted benefits | Service-providers   * Scan international literature on incentive systems and on encouraging innovation * Identify Ethiopian cases of use of non-monetary incentives   Farmers and investors   * Working with MoA and other stakeholders, develop clear guidelines on cost- and benefit-sharing on watersheds, optimizing overall benefit stream, and how the concept of ‘smart subsidies’ can be tested in Ethiopia * Design an action research program on watershed RWM incentive systems as part of larger collaborative program proposal |
|  | Ethiopia’s investments in its **human resources** and **institutional capacities** are already paying enormous dividends. Strengthening these investments will further enhance the benefits.  Human resources   * *Implementers:* Improve the formal training curriculum (e.g. TVET, as planned), complemented by continuous in-service training, e.g. in problem-solving, communication and facilitation skills * *Implementers, farmers:* Supplement formal training with informal hands-on training for farmers and other stakeholders (including special arrangements for women), e.g. through farmer field days, farmer-to-farmer exchanges * *Farmers:* Make greater use of learning tools such as games, including those developed and tested under NBDC * *Researchers:* Long and short term training, facilitate access to resources for example on-line material * Support use of well-supervised post-graduate students to obtain independent feedback on RWM programs and innovations   Institutional capacity   * Improve quality of facilities, e.g. internet access * Improve incentive structure (e.g. benefits like housing, schooling) for researchers, especially those posted in Regions   **Training Needs Assessment recommended by workshop participants** | Workshop participants considered this a very high priority message, but proposed two distinctions: between developing human resources and institutional capacities; and between research and implementation (both extension workers and farmers) capacities. They also strongly recommended implementing a Training Needs Assessment (TNA)  Human resources   1. Improving training is central to draft Agricultural Extension Strategy 2. Informal hands-on training is also discussed in draft Agricultural Extension Strategy 3. Learning tools discussed in next message 4. Workshop participants from research institutions felt that research should have a higher priority, as Ethiopia moves to “knowledge-based development”, and that the previous emphasis on ‘massification’ of education should now shift to a greater focus on quality 5. Well-supervised post-graduate students can play important roles in obtaining feedback on intervention programs as well as contributing to their capacity building   Institutional capacity   1. Workshop participants emphasized the need to improve the quality of facilities for both researchers and development agents 2. Workshop participants also emphasized the need to improve the incentives for researchers and extension staff, especially regarding facilities for families, etc. 3. The workshop participants strongly recommended carrying out a national “**Training Needs Assessment**” (TNA) for promoting improved RWM. This should be broad-based, examining institutional capacities, incentive structures, actual skills and knowledge needed, targeting training, etc. They proposed developing a terms of reference, seeking resources from the Ministry of Agriculture, and outsourcing to consultants. A consultative workshop should be used to get feedback on the proposed work plan and methodology, and workshops to share and get feedback on draft report. | The remarkable progress made in Ethiopia as a result of its investments in human resources and strengthening institutional capacities is strong evidence in favor of these investments.  Human resources   1. Draft Agricultural Extension strategy 2. Draft Agricultural Extension Strategy; experience gained in Ethiopia and elsewhere with farmer-farmer training, farmer field schools, etc. 3. See message 6 4. Workshop participants’ experiences 5. NBDC and other CGIAR experience—see NBDC website   Institutional capacity   1. Workshop participants’ experiences 2. Workshop participants’ experiences 3. Workshop participants’ recommendation. Professionally implemented based on a carefully prepared TOR, TNAs can be a very important tool for planning future strategies and investments; methodologies and samples are available | * Submit comments on the draft Agricultural Extension Strategy (draft already prepared) * Collaborate with MoA and others in strengthening TVET and other RWM training curriculum and training methods * The first two points could be part of the proposal for the larger future collaborative program * Offer to collaborate with research institution partners to help them develop the case for improving facilities and incentives for researchers * Take the lead in developing a short concept note on implementation of a TNA and remain in touch with its implementation as peer reviewers |
| 6. | Use the growing suite of new **models and tools**, combined **with stronger learning processes**, to increase the effectiveness of planning, implementation, and capacity building. These include:   * Integrate hydrologic, water resource, and economic models for planning, scaling out, and impact assessments * User-friendly tools to facilitate local level learning, training, and identifying appropriate interventions * A centralized database for geographical and other data could enhance the efficiency of planning, implementation, learning, and evaluation processes | Workshop participants supported this message and suggested some refinements   1. NBDC and other projects in Ethiopia and elsewhere have developed excellent models and tools that are use-able for practical purposes and user-friendly. 2. Need to simplify the tools, make them more user-friendly, and validate their actual usefulness and impact. 3. Integrated modeling and spatial analysis at basin scale can inform policy and planning processes. Workshop participants: a full suite of tools customized for different users will constitute a useful decision support system (DSS) 4. Combine local and external knowledge and in an iterative process share with local communities in a user-friendly format 5. Combining the suite of tools with recommendations on process appears critical to success 6. Need to invest in necessary infrastructure as well (e.g. computers, internet access) 7. Currently obtaining data is difficult and time-consuming, reducing efficiency of research and planning. | 1. Good evidence; examples are WAT-A-GAME, participatory videos, digital stories, Happy Strategies game. Pfeifer et al. 2012a [NBDC Tech. Rpt. 4]; <http://www.watagame.info/>; <http://nilebdc.org/> 2. The process of making them more user-friendly is currently being done to some extent under NBDC but more must be done; an effective monitoring system is needed to assess usefulness 3. Good evidence at pilot scale; examples are Nile Goblet tool, basic user-friendly GPS & GIS, and use of WEAP, SWOT, spatial analysis<http://nilebdc.org/?s=nile+goblet+tool>;   Example: recent work in Abay Basin of modeling and spatial analysis identified erosion “hot spots” [to be documented]   1. Workshop participants; “Happy Strategies” game is an example 2. Tools alone are not enough; they need to be used in a learning-oriented process. Needs further validation 3. Workshop participants 4. Experience of many researchers and others expressed by NBDC team | * Work on further simplifying and field testing learning tools developed under NBDC * Prioritize completing development and integration of modeling and spatial analysis tools for use as a DSS * Prepare a plan for scaling the use of such tools out, and promoting a learning process, as part of the proposed larger collaborative program |

\* Numbering of this column on ‘evidence’ is keyed to the numbering in the ‘explanatory notes’ column.

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1. International Livestock Research Institute, International Water Management Institute, World Agroforestry Centre, Oversees Development Institute, Nile Basin Initiative, Stockholm Environment Institute, Ethiopian Economic Policy Research Institute, Catholic Relief Services – Ethiopia, Oromia Regional Research Institute, Amhara Agricultural Research Institute, Bahir Dar University, Ambo University, Nekemte University, the Ministry of Agriculture and Rural Development and the Ministry of Water Resources. [↑](#footnote-ref-1)
2. Globally, developing countries have tended to use top-down approaches. There is very strong evidence such approaches rarely achieve large-scale sustainable outcomes. There are no definitive studies demonstrating the efficacy of a fully community-driven approach, but there are a growing number of case studies offering good evidence. [↑](#footnote-ref-2)